



श्री Venkateshwar International School

Sector-18, Dwarka, New Delhi-78
PA-2 / MID-TERM (2021-2022)
SCIENCE- IX

Time: 2 hours

Max. Marks: 40

General Instructions:

- (i) The question paper consists of 40 questions. All questions are compulsory.
- (ii) All the questions are of one mark each. These questions contain multiple choice questions (MCQs), assertion – reason questions (MCQs) and case study based questions (MCQs).

Attempt Q1 - Q5, after going through the following data carefully.

For studying cell division in onion root tips, onion root tips were grown. Two beakers filled with water were taken and the onion bulbs were kept in the mouth of each beaker. The length of roots were observed in each beaker and noted in the table given below:

DAYS	BEAKER 1	BEAKER 2
Day 1	1	1
Day 2	1.3	1.4
Day 3	1.7	0.8
Day 4	2.1	0.8
Day 5	2.5	0.8

On day 3 the root tips of the onion on beaker 2 were cut for the experiment. Observation of the length of roots was continued afterwards.

Answer the following questions based on the information.

Q1. What type of cell division is observed in onion root tips? Why? (1)

- (I) Mitosis, as these are somatic cells.
- (ii) Meiosis, as these are gametic cells.
- (iii) Mitosis, as these are gametic cells.
- (iv) Meiosis, as these are somatic cells.

Q2. Why is cell division important? (1)

- (i) Cell division results in repair of damaged cells.
- (ii) Cell division results in growth and repair of damaged cells.
- (iii) Cell division results in growth of damaged cells.
- (iv) Cell division results in killing damaged cells.

Q3. Why does the root of onion on beaker 2 stop growing after day 3? (1)

- (i) Lateral meristem of root is removed in the beaker 2 therefore it has lost the capacity of growth.
- (ii) Intercalary meristem of root is removed in the beaker 2 therefore it has lost the capacity of growth.
- (iii) Apical meristem of root is removed in the beaker 2 therefore it has lost the capacity of growth.
- (iv) Parenchyma of root is removed in the beaker 2 therefore it has lost the capacity of growth.

Q4. The conversion of meristematic tissues into permanent tissues is termed as (1)

- (i) modification.
- (ii) differentiation.
- (iii) dedifferentiation.
- (iv) division.

Q5. The leaves of water hyacinth float due to the presence of special type of complex tissue known as (1)

- (i) collenchymas
- (ii) chlorenchyma
- (iii) aerenchyma
- (iv) sclerenchyma

In Q6-Q11, study the two statements labelled as Assertion (A) and Reason (R). (6X1=6)

Point out if:

- (a) Both, A and R, are true and R is the correct explanation of A
- (b) Both, A and R, are true but R is not the correct explanation of A
- (c) If A is true but R is false
- (d) If A is false but R is true

Q6. ASSERTION (A) : A body can have acceleration even if its velocity is zero at a given instant of time.

REASON (R) : A body thrown vertically upwards is momentarily at rest at the highest point of its path. (1)

Q7. ASSERTION (A): Average velocity and instantaneous velocity have the same value in a uniform motion.

REASON (R): In uniform motion the velocity of a moving object changes uniformly. (1)

Q8. ASSERTION (A): Rusting of iron is called as corrosion and it is a physical as well as chemical change.

REASON (R): Rusting is caused due to the corrosion of iron surface that has been exposed to air and moisture and the formula of rust is hydrated iron oxide. (1)

Q9. ASSERTION (A): The particles of a solution are smaller than 1 nm (10^{-9} metre) in diameter.

REASON (R): Composition of a compound is same throughout. (1)

Q10. ASSERTION (A): Plant cells have a single large vacuole.

REASON (R): Vacuole is responsible for ingestion of food substance.

- Q11.** ASSERTION (A): A boy goes from A to B with a velocity of 20 m/min and comes back from B to A with a velocity of 30 m/min. The average velocity of the boy during the whole journey is zero
- REASON (R): Average velocity is zero if total displacement throughout the motion is zero. (1)
- Q12.** Suppose a boy is enjoying a ride on a merry-go-round which is moving with a constant speed of 10 m/s. It implies that the boy is: (1)
- (a) at rest
 (b) moving with no acceleration
 (c) in accelerated motion
 (d) moving with uniform velocity
- Q13.** When a car driver travelling at a speed of 10 m/s applies brakes and brings the car to rest in 20 s, then the retardation will be: (1)
- (a) $+ 2 \text{ m/s}^2$ (b) $- 2 \text{ m/s}^2$
 (c) $- 0.5 \text{ m/s}^2$ (d) $+ 0.5 \text{ m/s}^2$
- Q14.** In a free fall the velocity of a stone is increasing equally in equal intervals of time under the effect of gravitational force of the earth. Then what can you say about the motion of this stone? Whether the stone is having: (1)
- (a) uniform acceleration (b) non-uniform acceleration
 (c) retardation (d) constant speed
- Q15.** A passenger in a moving train tosses a coin which falls in front of him. It means that motion of the train is (1)
- (a) accelerated (b) uniform
 (c) retarded (d) along circular path
- Q16.** An object of mass 2 kg is sliding with a constant velocity of 4 m/s on a frictionless horizontal table. The force required to keep the object moving with the same velocity is (1)
- (a) 32 N (b) 0 N
 (c) 2 N (d) 8 N
- Q17.** Which of the following does not involve physical change of state of a substance? (1)
- (a) Recovering water from sea.
 (b) Fractional distillation of crude oil.
 (c) Hydrogenation of vegetable oils to form solid margarine.
 (d) Formation of white vapours when dry ice is left at room temperature.
- Q18.** Which of the following statement is NOT true for a compound? (1)
- (a) A compound is a homogeneous substance.
 (b) A compound contains different elements in a fixed ratio.
 (c) The properties of a compound are entirely different from those of the elements present in it.
 (d) The constituents of a compound can be separated by simple physical methods.

- Q19.** Which of the following statements is/are correct? (1)
- a. The concentration of a solution is the amount of solute present per unit volume or per unit mass of the solution/solvent.
b. The particles of a suspension are called the dispersed phase.
c. Brass is a mixture of approximately only 30% zinc and 70% copper.
(a) only (b) and (c) (b) only (a) and (b)
(c) only (a) and (c) (d) only (a)
- Q20.** Which of the following are chemical changes? (1)
- (i) Electrolysis of water.
(ii) Cutting of wood.
(iii) Decaying of wood.
(iv) Boiling of water to form steam.
- (a) (i) and (iii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)
- Q21.** Match the following: (1)
- (P) Fog (1) Solid in gas
(Q) Smoke (2) Solid in solid
(R) Steel (3) Solid in liquid
(S) Toothpaste (4) Liquid in gas
- (a) P-4, Q-1, R-2, S-3 (b) P-4, Q-1, R-3, S-2
(c) P-1, Q-2, R-4, S-3 (d) P-1, Q-3, R-2, S-4
- Q22.** Which of these options are not a function of ribosomes? (1)
- (i) It helps in manufacture of protein molecules
(ii) It helps in manufacture of enzymes
(iii) It helps in manufacture of hormones
(iv) It helps in manufacture of starch molecules
- (a) (i) and (ii) (b) (i), (ii) and (iii)
(c) (iii) and (iv) (d) (iv) and (i)
- Q23.** Find the correct match (1)
- (a) The moist surface of the buccal cavity has glandular epithelium
(b) The tubular parts of nephrons have cuboidal epithelium
(c) The inner surface of bronchioles have squamous epithelium
(d) The inner lining of salivary ducts have ciliated epithelium
- Q24.** A cell may swell and even burst if: (1)
- (a) the concentration of water molecules within the cell is higher than the concentration of water molecules in the surrounding medium.
(b) the concentration of water molecules in the surrounding medium is higher than the concentration of water molecules within the cell.
(c) the concentration of water molecules is the same in the cell and in the surrounding medium.
(d) it is a plant cell surrounded by a hypertonic solution.

- Q25.** While doing work and running, you move your organs like hands, legs, etc. Which among the following is correct? (1)
- (a) Smooth muscles contract and pull the ligament to move the bones.
 - (b) Smooth muscles contract and pull the tendons to move the bones.
 - (c) Skeletal muscles contract and pull the ligament to move the bones.
 - (d) Skeletal muscles contract and pull the tendon to move the bones.
- Q26.** Plasmolysis in a plant cell is defined as: (1)
- (a) break down (lysis) of plasma membrane in hypotonic medium.
 - (b) shrinkage of cytoplasm in hypertonic medium.
 - (c) shrinkage of nucleoplasm.
 - (d) none of them.
- Q27.** Which muscles act involuntarily? (1)
- (i) Striated muscles
 - (ii) Smooth muscles
 - (iii) Cardiac muscles
 - (iv) Skeletal muscles
- (a) (i) and (ii) (b) (ii) and (iii) (c) (iii) and (iv) (d) (i) and (iv)
- Q28.** Select the incorrect sentence: (1)
- (a) blood has matrix containing proteins, salts and hormones
 - (b) two bones are connected with ligament
 - (c) tendons are non- fibrous tissue and fragile
 - (d) cartilage is a form of connective tissue
- Q29.** Select the odd one out: (1)
- (a) the movement of water across a semipermeable membrane is affected by the amount of substances dissolved in it.
 - (b) membranes are made of organic molecules like proteins and lipids.
 - (c) molecules soluble in organic solvents can easily pass through the membrane.
 - (d) plasma membranes contain chitin sugar in plants.
- Q30.** A long tree has several branches. The tissue that helps in the side ways conduction of water in the branches: (1)
- (a) collenchyma
 - (b) xylem parenchyma
 - (c) parenchyma
 - (d) xylem vessels

Read the following passage and answer the questions from 31 to 35

Newton's first law explains what happens to an object that has no net force acting on it. The object either remains at rest or continues moving in a straight line with constant speed. Newton's second law explains that the acceleration of an object is directly proportional to the net force acting on it and is inversely proportional to its mass. The direction of the acceleration is in the direction of the net force acting on the object.

Imagine pushing a block of ice across a frictionless horizontal surface. When you exert some horizontal force on the block, it moves with an acceleration of the 2m/s^2 . If you apply a force twice as large, the acceleration doubles to 4m/s^2 . Pushing three times as hard, triples the acceleration, and so on. From such observations, we conclude that the acceleration of an object is directly proportional to the net force acting on it.

Mass also affects acceleration. Suppose you stack identical block of ice on top of each other while pushing the stack with constant force. If the force applied to one block produces an acceleration of 2m/s^2 , then the acceleration drops to half that value, 1 m/s^2 , when 2 blocks are pushed, to one-third the initial value, when three blocks are pushed, and so on. We conclude that the acceleration of an object is inversely proportional to its mass. These observations are summarized in Newton's second law of motion:

The acceleration of an object is directly proportional to the net force acting on it and inversely proportional to its mass.

Q31. Force measures rate of change of **(1)**

- (a) mass (b) velocity (c) momentum (d) acceleration

Q32. Which one is not the unit of force? **(1)**

- (a) Newton (b) Kgms^{-2} (c) Dyne (d) Joule

Q33. The seat belts are provided in the cars so that if the car stops suddenly due to an emergency braking, the persons sitting on the front seats are not thrown forward violently and saved from getting injured. Can you guess the law due to which a person falls in forward direction on the sudden stopping of the car? **(1)**

- (a) Newton's first law of motion
(b) Newton's second law of motion
(c) Newton's third law of motion
(d) Newton's law of gravitation

Q34. A cricket player lowers his hands gradually while catching a fast moving ball. This enables the cricketer to: **(1)**

- (a) exert large force on the ball
(b) increases the force exerted by the ball on hands
(c) increase the rate of change of momentum
(d) decrease the rate of change of momentum

Q 35. Which of the following situations involves Newton's second law of motion? **(1)**

- (a) A force can stop a lighter vehicle as well as a heavier vehicle which are moving
(b) A force exerted by a lighter vehicle on collision with a heavier vehicle results in both the (vehicles coming to a standstill
(c) A force can accelerate a lighter vehicle more easily than a heavier vehicle which are moving
(e) A force exerted by the escaping air from a balloon in the downward direction makes the balloon to go upwards.

- Q36.** A student crushed a piece of chalk and mixed the chalk powder in 100 mL water. (1)
The water appeared white and cloudy. After sometime, the particles settled at the bottom of the container. She claims that the mixture is a suspension. What justifies her claim?
(a) The particles mix completely with water.
(b) The particles of chalk form a separate layer.
(c) The particles of chalk are visible through the naked eye.
(d) The particles of chalk are uniformly distributed in water
- Q37.** Calculate the concentration of solution which contains 3.5 g of salt dissolved in 60 g water. (1)
(a) 4.7% (b) 5% (c) 3.7% (d) 5.5%
- Q38.** In a mixture of iron filing and sulphur powder, the components of mixture can be separated by (1)
(a) using a magnet.
(b) dissolving the mixture in CS_2 and then filtering.
(c) heating the mixture and then adding CS_2 to the black mass.
(d) both (a) and (b)
- Q39.** There is a large group of material P which can be divided into Q, R and S on the basis of their physical properties. The substances belonging to group Q can be solids, liquids or gases. The solids belonging to group Q are usually electrical insulators. Most of the substances of group R are solids which are good conductors of electricity. The substances belonging to group S are neither insulators like Q nor good conductors like R. The properties of S are intermediate between those of Q and R. What could be P, Q, R and S? (1)
(a) P- Element, Q – Non- metal, R – Metal, S - Metalloid
(b) P- Element, Q – Metal, R – Non - Metal, S - Metalloid
(c) P- Compound, Q – Non- metal, R – Metal, S - Metalloid
(d) P- Compound, Q – Non- metal, R – Metal, S - Metalloid
- Q40.** Select the incorrect statements(s). (1)
(i) Although ice, water and water vapour all look different and display different physical properties, they are chemically the same.
(ii) During burning of a candle, both physical and chemical changes take place.
(iii) Both water and cooking oil are liquid but their chemical characteristics are different. They differ in odour and inflammability.
(iv) It is the physical property of oil that makes it different from water.
(a) (i) and (ii) (b) (ii) and (iii)
(c) (i), (ii) and (iii) (d) Only (iv)